E/CONF.39/D/101
SUMMARY
19 Oct. 1962
ORIGINAL : ENGLISH

UNITED NATIONS CONFERENCE
ON THE APPLICATION OF SCIENCE AND TECHNOLOGY
FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

SUMMARY

Agenda Item: D.4.3

United Kingdom

PRESENT AND FUTURE DEVELOPMENTS IN BULK STORAGE OF PRODUCE

By F.N. WRIGHT

Papers have been contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas as working papers for that Conference. They are published as presented by the contributors, and the contents and the views expressed are those of the contributors. (See notes overleaf.)

NOTES

1. Papers selected for inclusion in General Sessions will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

2. Papers selected for inclusion in Specialized Sessions will be available at the Conference in only one of the above official languages.

3. Summaries of all papers, as submitted by contributors, will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

4. Papers and summaries will not be available for general distribution in advance of the Conference. They will be published in advance in limited quantities only for the use of delegations of participating governments and of other authorized participants. Post-Conference publication and general distribution of the Conference Proceedings will follow United Nations practices as laid down by the United Nations Publications Board.

Present and future developments in bulk storage of produce

by F.N. Wright

Storage in bags and bulk are briefly compared. The main advantages of bulk storage are the saving of time and labour, also, less storage space is required.

In order to store produce without deterioration it must be dried either by means of the sun or by artificial means. The relationship between the moisture content of a commodity and the relative humidity of the air is important in determining the level of moisture content at which a commodity can be taken into store; safe levels of moisture content will vary according to whether the produce is to be stored in a temperate or tropical climate.

Regular checks are necessary during the storage period to detect any deterioration due to translocation of moisture and the development of fungi or insects Methods of detecting deterioration include measurement of moisture content, temperatur carbon dioxide production by insects and finding of insects.

Traditional storage structures for flat and upright storage are considered. Generally, bulk storage is in bins. Their design and materials available for their construction are described. In designing bins lateral pressures which determine the strength requirements of the walls must be known.

For commodities other than grain special attention has to be paid to handling processes to avoid breakage. For a brittle commodity such as cocoa beans specially designed silos incorporating baffles or slides are necessary. Bins must be waterproof, special attention being paid to the foundations to prevent water being transmitted from the soil to the stored commodity. Bins should at least be rodent-proof and preferably insect-proof. A desirable feature is that they should also be gastight to enable fumigation to be carried out.

New types of storage structures are described. When storage facilities are inadequate as when excess harvests are produced interest is currently being shown in 'airhouses' which are buildings constructed of flexible plastic materials, their shape being maintained by blowing air into them. Structures supported by pneumatic arches are also currently being examined. The use of such plastic buildings would add flexibility to existing storage systems.

Bulk storage is largely confined to the cereal grain, one of the reasons for this is that the grain trade is large enough for special grain ships to be devoted to transportation of grain. Few other commodities could be shipped in similar

quantities and it is not easy to subdivide holds for several commodities whose quantities vary on each shipment. The possibility of transporting commodities in semi-bulk containers is examined. The advantages of the use of containers are the time and labour saved during loading and unloading. These containers could be insect proof, insulated and gastight. If filled in the producing areas there would be a reduction in the damage to commodities by insects; the use of containers could eliminate conventional bag-storage premises.

Methods for controlling insect infestations are discussed. The most usual method is chemical treatment including fumigation or the use of contact insecticides. An alternation method is airtight storage where infested dry grain is stored in an airtight container, any insects present eventually drying when they have depleted the oxygen. Airtight pits used in the Argentine and airtight bins used in Cyprus are described. Two experimental plastic, airtight containers are also described.

S - 1062 E - Oct. 1962 - 1,600